IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Nikoonahad et al.	§	Group Art Unit: 2863
	§	Examiner: Washburn, D.
Serial No. 10/670,183	§	Atty. Dkt. No. 5589-02326/P688-04C
Filed: September 24, 2003	§	
For: METHODS AND SYSTEMS FOR DETERMINING A CRITICAL DIMENSION AND A THIN FILM CHARACTERISTIC OF A SPECIMEN	§	I hereby certify that this correspondence is being transmitted via facsimile or deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below: 4-4-05 Date; Pamela Gerik (signature) Pamela Gerik

SUPPLEMENTAL APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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Sir/Madam:

Further to the Notice of Appeal faxed October 14, 2004 and received in the Patent Office on October 14, 2004, and the Notification of Non-Compliant Appeal Brief mailed March 4, 2005, Appellant presents this Supplemental Appeal Brief to replace the prior Appeal Brief mailed December 13, 2004. This Supplemental Appeal Brief is hereby filed within one month (or 30 days) from the mailing date of the Notification, and therefore is considered timely.

The Notice of Appeal was filed following mailing of a Final Office Action on August 24, 2004. Appellant asserts that the prior Appeal Brief to the Board of Patent Appeals and Interferences was timely pursuant to 37 C.F.R. § 1.192(a). Accordingly, Appellant hereby appeals to the Board of Patent Appeals and Interferences from a final rejection of claims 6633-6651 in the Final Office Action mailed August 24, 2004, and respectfully requests that this appeal be considered by the Board.

I. REAL PARTY IN INTEREST

The subject application is owned by KLA-Tencor, Inc., a corporation having a place of business at 160 Rio Robles, San Jose, California 95134, as evidenced by the assignment recorded at reel 014550, frame 0455.

II. RELATED APPEALS AND INTERFERENCES

No other prior and pending appeals, interferences, or judicial proceedings are known to Appellant or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-6632 were canceled. Claims 6633-6651 stand finally rejected. Claim 6652 was objected to. Claims 6633-6651 are being appealed.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to their final rejection. The Claims Appendix attached hereto reflects the current state of the claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's claimed invention relates to a system configured to determine at least two properties of a specimen. (Specification -- page 147, line 15 - page 148, line 3). The system includes a spectroscopic ellipsometer (238, Fig. 23) configured to generate one or more output signals during measurement of the specimen. (Specification -- page 139, line 22 - page 142, line 13). The system also includes a processor (270) coupled to the spectroscopic ellipsometer. The processor is configured to determine a critical dimension and a thin film characteristic of the specimen from the one or more output signals. (Specification -- page 98, line 19 - page 103, line 13, page 106, lines 11-13, page 188, line 1 - page 190, line 11, page 255, lines 19-25).

Appellant's claimed invention also relates to a system (32, Fig. 13) configured to determine at least two properties of a wafer (10, Fig. 1). The system includes a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the wafer. The spectroscopic ellipsometer is integrated into a lithography track (130, Fig. 13). The system also includes a processor coupled to the spectroscopic ellipsometer. The processor is configured to determine a critical dimension and a thin film characteristic of the wafer from the one or more output signals. (Specification -- page 98, line 19 - page 103, line 3, page 255, line 17 - page 257, line 2).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 6633 and 6635-6651 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,900,939 to Aspnes et al. (hereinafter "Aspnes").

2. Claim 6634 stands rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,563,586 to Stanke et al. (hereinafter "Stanke").

VII. ARGUMENT

The contentions of Appellant with respect to each ground of rejection presented for review, and the basis therefore, with citations of the statutes, regulations, authorities, and parts of the record relied on are presented herein for consideration by the Board.

Rejection under 35 U.S.C. § 102(b) over Aspnes

A. Claims 6633, 6636-6637, 6642, and 6645-6647

1. A critical dimension as presently claimed is not equivalent to a critical metric as this term is used in the Specification.

Independent claim 6633 recites in part: "a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the specimen; and a processor coupled to the spectroscopic ellipsometer and configured to determine a critical dimension and a thin film characteristic of the specimen from the one or more output signals."

As defined in the Specification:

> A critical dimension may include a lateral dimension of a feature defined in a direction substantially parallel to an upper surface of the specimen such as width 62 of feature 56 on specimen 60. Therefore, a critical dimension may be generally defined as the lateral dimension of a feature when viewed in cross section such as a width of a gate or interconnect or a diameter of a hole or via. A critical dimension of a feature may also include a lateral dimension of a feature defined in a direction substantially perpendicular to an upper surface of the specimen such as height 64 of feature 56 on specimen 60. (Specification -- page 74, lines 17-23.)

Therefore, a "critical dimension" as defined in the Specification does not include a thickness of a film. In contrast, the Specification states that "Examples of thin film characteristics include, but are not limited to, a thickness, an index of refraction, and an extinction coefficient." (Specification -- page 250, lines 11-12.) Therefore, a film thickness is defined in the Specification as a thin film characteristic, as presently claimed.

The definition of the term "critical dimension" provided in the Specification is consistent with the accepted meaning of the term known in the art. For example, "critical dimensions (CDs)" are defined as "The widths of lines and spaces of critical circuit patterns as well as the area of contacts" by Peter Van Zant, Microchip Fabrication: A Practical Guide to Semiconductor Processing, Fourth Edition, New York, New York, McGraw-Hill, 2000, p. 598, a copy of which is submitted herewith. In addition, S. Wolf et al., in Silicon Processing for the VLSI Era: Volume 1 - Process Technology, Sunset Beach, California, Lattice Press, 1986, on p. 447, a copy of which is submitted herewith, states that "There are two aspects of feature sizes that must be controlled in the lithographic/etching process: a) the absolute size of a minimum feature, including linewidth, spacing, or contact dimensions (also referred to as a *critical dimension* of CD)." (emphasis in original). In addition, in the Handbook of Silicon Semiconductor Metrology, Alain C. Diebold, New York, New York, Marcel Dekker, Inc., 2001, on p. 377, a copy of which is submitted herewith, M. Cresswell et al. state that "Usually, test patterns include features that have drawn linewidths matching the minimum of the features being printed in the circuit. These linewidths are typically referred to as the process's *critical dimensions* (CDs)." (emphasis in original). Therefore, consistent with the definition of a critical dimension provided in the Specification, the definition of the term critical dimension accepted in the art does not include a thickness of a film. A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. MPEP 2173.01. It is appropriate to compare the meaning of terms given in technical dictionaries in

order to ascertain the accepted meaning of a term in the art. *In re Barr*, 444 F.2d 588, 170 USPQ 330 (CCPA 1971). MPEP 2173.05(a).

The Final Office Action mailed August 24, 2004 (PTO Paper No. 2212004) notes on page 7 that the Specification states:

> critical metrics of a lithography process may include a property such as, but are not limited to, critical dimensions of features formed by the lithography process and overlay misregistration. Critical metrics of a process, however, may also include any of the properties as described herein including, but not limited to, a presence of defects on the specimen, a thin film characteristic of the specimen, a flatness measurement of the specimen, an implant characteristic of the specimen, an adhesion characteristic of the specimen, a concentration of elements in the specimen. (Specification -- page 246, lines 1-8.)

Therefore, the Specification defines the term "critical metric" as a property, two examples of which are a critical dimension and a thin film characteristic, and one example of a thin film characteristic provided in the Specification is a thickness of a film. Consequently, the Specification defines a critical metric as a property, two examples of which are a critical dimension and a film thickness.

However, this definition of a critical metric does not result in a critical dimension being equivalent to a film thickness. For example, a "metric" is commonly defined as "A standard of measurement." *See*, for example, Webster's II New Riverside University Dictionary, Boston, Massachusetts, Houghton Mifflin Company, 1984, p. 748, a copy of which is submitted herewith. As a result, the Specification defines a critical metric or a critical standard of measurement as a property, two examples of which are a critical dimension and a film thickness. Therefore, the term critical metric cannot be interpreted as being equivalent to the term critical dimension such that a critical dimension can be defined as a film thickness as suggested in the Final Office Action since a "critical dimension" and a "critical metric" are clearly two different terms having different meanings.

For at least the reasons provided above, therefore, the term "critical dimension" is not defined in the Specification as a film thickness. In addition, for at least the reasons provided above, the usual meaning of the term critical dimension accepted in the art is not a film thickness. Therefore, the claimed critical dimension cannot be given a meaning as suggested in the Final Office Action of a film thickness since that meaning of the term critical dimension would be repugnant to (i.e., inconsistent with) its usual meaning. While a term used in the claims may be given a special meaning in the description of the

invention, generally no term may be given a meaning repugnant to the usual meaning of the term. *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). MPEP 2173.05(a).

2. Aspnes does not teach or suggest a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer.

Aspnes discloses a thin film optical measurement system and method with calibrating ellipsometer. Aspnes, however, does not disclose a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer. For example, Aspnes states that "To determine this information, the processor 48 takes the difference between the sums of the output signals of diametrically opposed quadrants, a value which varies linearly with film thickness for very thin films." (Aspnes -- col. 4, lines 30-34.) Therefore, Aspnes discloses a processor that is configured to determine a film thickness of a specimen. However, Aspnes does not disclose a processor that is configured to determine a critical dimension of the specimen. In addition, as set forth in detail above, the claimed critical dimension is not equivalent to a film thickness. Therefore, Aspnes does not teach or suggest determining a critical dimension as presently claimed. As such, Aspnes does not teach or suggest a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer.

3. The Examiner has failed to support a ground of anticipation of claim 6633 by Aspnes.

The standard for "anticipation" is one of fairly strict identity. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP 2131. As pointed out above, Aspnes does not teach a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer, as recited in claim 6633. Aspnes, therefore, does not teach each and every element set forth in claim 6633, and claim 6633 is not anticipated by Aspnes.

Conclusion

As explained in Arguments 1-3 above, certain limitations of independent claim 6633 are not taught or suggested by Aspnes. Claim 6633 is therefore not anticipated by Aspnes. Because claims

6636-6637, 6642, and 6645-6647 are dependent from claim 6633, these claims are also not anticipated by Aspnes. The rejection of claims 6633, 6636-6637, 6642, and 6645-6647 under 35 U.S.C. § 102 is therefore asserted to be erroneous.

B. Claims 6635 and 6649-6650

Independent claim 6649 recites: "a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the wafer,...and a processor coupled to the spectroscopic ellipsometer and configured to determine a critical dimension and a thin film characteristic of the wafer from the one or more output signals." Because claim 6649 recites these limitations, which are similar to those of claim 6633, the arguments presented above for claim 6633 apply equally to claim 6649, and are herein incorporated by reference. Because claim 6635 is dependent from claim 6633, the arguments presented above for claim 6633 also apply equally to claim 6635. Claim 6635 further recites that the claimed system is integrated into a process tool. Claim 6649 recites a similar limitation. These additional recitations make claims 6635 and 6649-6650 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a system that is configured to determine at least two properties of a specimen and that is integrated into a process tool.

Aspnes states that "The preferred measurement systems rely on non-contact, optical measurement techniques, which can be performed during the semiconductor manufacturing process without damaging the wafer sample." (Aspnes -- col. 1, lines 21-24). Therefore, Aspnes discloses that a measurement system may perform measurements during a process. However, Aspnes does not teach or suggest that a measurement system is or can be integrated into a process tool. For example, measurement systems that are configured to perform measurements after a lithography process but before an etch process may be considered to perform these measurements during a semiconductor manufacturing process. However, such measurement systems are not necessarily integrated into a process tool. Instead, these measurement systems can be configured as stand alone tools or non-integrated tools. Therefore, since Aspnes does not teach or suggest that the measurement system that can perform measurements during a process is integrated into a process tool, Aspnes does not teach or suggest a system that is configured to determine at least two properties of a specimen and that is integrated into a process tool. The claimed system integrated into a process tool is therefore not taught by the cited art, and claims 6635 and 6649 are patentable over this art. Because claim 6650 is dependent from claim 6649, this claim is

also not anticipated by Aspnes. Rejection of claims 6635 and 6649-6650 is therefore asserted to be erroneous.

C. Claims 6638-6641

Because claims 6638-6641 are dependent from claim 6633, the arguments presented above for claim 6633 apply equally to claims 6638-6641, and are herein incorporated by reference. Claims 6638-6641 further recite that the claimed spectroscopic ellipsometer is configured to illuminate the specimen at a normal angle of incidence. These additional recitations make claims 6638-6641 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a spectroscopic ellipsometer configured to illuminate a specimen at a normal angle of incidence.

Aspnes states that "Broadband spectroscopic ellipsometry (BSE)...(18) includes a polarizer 70, focusing mirror 72, collimating mirror 74, rotating compensator 76, and analyzer 80." (Aspnes -- col. 5, lines 41-46). Aspnes also states that "Mirror 72 focuses the beam onto the sample surface at an oblique angle, ideally on the order of 70 degrees to the normal of the sample surface." (Aspnes -- col. 5, lines 49-52). Therefore, Aspnes discloses a spectroscopic ellipsometer configured to illuminate a specimen at an oblique angle of incidence. However, Aspnes does not teach or suggest a spectroscopic ellipsometer configured to illuminate a specimen at a normal angle of incidence. The claimed spectroscopic ellipsometer is therefore not taught by the cited art, and claims 6638-6641 are patentable over this art. Rejection of claims 6638-6641 is therefore asserted to be erroneous.

D. Claim 6643

Because claim 6643 is dependent from claim 6633, the arguments presented above for claim 6633 apply equally to claim 6643, and are herein incorporated by reference. Claim 6643 further recites that the claimed processor is configured to use the thin film characteristic to determine the critical dimension. This additional recitation makes claim 6643 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a processor that is configured to use a thin film characteristic of a specimen to determine a critical dimension of the specimen.

As discussed further above with respect to claims 6633, 6636-6637, 6642, and 6645-6647, Aspnes does not teach or suggest a processor that is configured to determine a critical dimension of a specimen from one or more output signals generated by a spectroscopic ellipsometer. As such, Aspnes cannot teach or suggest a processor configured to use a thin film characteristic of a specimen to determine a critical dimension of the specimen, since Aspnes does not teach determining a critical dimension at all. The claimed processor is therefore not taught by the cited art, and claim 6643 is patentable over this art. Rejection of claim 6643 is therefore asserted to be erroneous.

E. Claim 6644

Because claim 6644 is dependent from claim 6633, the arguments presented above for patentability of claim 6633 apply equally to claim 6644, and are herein incorporated by reference. Claim 6644 further recites that the claimed system is coupled to a stand-alone metrology or inspection system and that these systems are configured such that signals may be sent between the systems. This additional recitation makes claim 6644 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a system configured to determine at least two properties of a specimen that is coupled to a stand-alone metrology or inspection system.

Aspnes states that "Composite optical measurement system 1 includes a Beam Profile Ellipsometer (BPE) 10, a Beam Profile Reflectometer (BPR) 12, a Broadband Reflective Spectrometer (BRS) 14, a Deep Ultra Violet Reflective Spectrometer (DUV) 16, and a Broadband Spectroscopic Ellipsometer (BSE) 18." (Aspnes – col. 3, lines 45-50). Therefore, Aspnes discloses one system that includes a number of different measurement devices. However, Aspnes does not disclose that this one system is coupled to a stand-alone metrology or inspection system. Therefore, Aspnes does not teach or suggest a system configured to determine at least two properties of a specimen that is coupled to a stand-alone metrology or inspection system. The claimed system is therefore not taught by the cited art, and claim 6644 is patentable over this art. Rejection of claim 6644 is therefore asserted to be erroneous.

F. Claim 6648

Because claim 6648 is dependent from claim 6633, the arguments presented above for claim 6633 apply equally to claim 6648, and are herein incorporated by reference. Claim 6648 further recites

that the claimed specimen includes a substrate suitable for fabrication of a reticle. This additional recitation makes claim 6648 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a system configured to determine at least two properties of a substrate suitable for fabrication of a reticle.

Aspnes states that "There is considerable interest in developing systems for accurately measuring the thickness and/or composition of thin films. The need is particularly acute in the semiconductor manufacturing industry where the thickness of these thin film oxide layers on semiconductor substrates is measured." (Aspnes -- col. 1, lines 14-18). Therefore, Aspnes discloses measuring properties of a semiconductor substrate. However, Aspnes does not disclose measuring properties of a substrate suitable for fabrication of a reticle such as a glass substrate. Therefore, Aspnes does not teach or suggest a system configured to determine at least two properties of a substrate suitable for fabrication of a reticle. The claimed system is therefore not taught by the cited art, and claim 6648 is patentable over this art. Rejection of claim 6648 is therefore asserted to be erroneous.

G. <u>Claim 6651</u>

Because claim 6651 is dependent from claim 6649, the arguments presented above for claim 6649 apply equally to claim 6651, and are herein incorporated by reference. Claim 6651 further recites that the claimed spectroscopic ellipsometer is configured to illuminate the specimen at a normal angle of incidence. This additional recitation makes claim 6651 separately patentable over the cited art, as described in more detail below.

Aspnes does not teach or suggest a spectroscopic ellipsometer configured to illuminate a specimen at a normal angle of incidence.

As discussed further above with respect to claims 6638-6641, Aspnes does not teach or suggest a spectroscopic ellipsometer configured to illuminate a specimen at a normal angle of incidence. The claimed spectroscopic ellipsometer is therefore not taught by the cited art, and claim 6651 is patentable over this art. Rejection of claim 6651 is therefore asserted to be erroneous.

Rejection under 35 U.S.C. § 102(e) over Stanke

Claim 6634

1. **A critical dimension as presently claimed is not equivalent to a critical metric as this term is used in the Specification.**

Because claim 6634 is dependent from claim 6633, claim 6634 includes all of the limitations of claim 6633. As discussed further above with respect to claims 6633, 6636-6637, 6642, and 6645-6647, a critical dimension as presently claimed is not equivalent to a critical metric as this term is used in the Specification. Therefore, the presently claimed critical dimension is not equivalent to a film thickness as suggested in the Final Office Action.

2. **Stanke does not teach or suggest a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer.**

Stanke discloses a wafer metrology apparatus and method. Stanke, however, does not disclose a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer. For example, Stanke states that "Following collection of a reference spectrum a data reduction algorithm utilizing the reference spectrum is used to calculate film thickness from spectra collected from wafer 420." (Stanke -- col. 14, lines 17-20). Therefore, Stanke discloses a processor that is configured to determine a film thickness of a specimen. However, Stanke does not disclose a processor that is configured to determine a critical dimension of the specimen. In addition, as set forth in detail above, the claimed critical dimension does not include a film thickness. Therefore, Stanke does not teach determining a critical dimension as presently claimed. As such, Stanke does not teach a processor coupled to a spectroscopic ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer.

3. **The Examiner has failed to support a ground of anticipation of claim 6634 by Stanke.**

The standard for "anticipation" is one of fairly strict identity. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP 2131. As pointed out above, Stanke does not teach a processor coupled to a spectroscopic

ellipsometer that is configured to determine a critical dimension of a specimen from one or more output signals generated by the spectroscopic ellipsometer, as recited in claim 6633. Stanke, therefore, cannot teach, expressly or inherently, each and every element set forth in claim 6633, and claim 6633 is not anticipated by Stanke.

Conclusion

As explained in Arguments 1-3 above, certain limitations of independent claim 6633 are not taught or suggested by Stanke. Claim 6633 is therefore not anticipated by Stanke. Because claim 6634 is dependent from claim 6633, this claim is also not anticipated by Stanke. The rejection of claim 6634 under 35 U.S.C. § 102 is therefore asserted to be erroneous.

CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejection of claims 6633-6651 was erroneous, and reversal of the Examiner's decision is respectfully requested.

The Commissioner is hereby authorized to charge the required fee(s) to deposit account number 50-3268/5589-02326.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

The present claims on appeal are as follows.

6633. A system configured to determine at least two properties of a specimen, comprising:

a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the specimen; and

a processor coupled to the spectroscopic ellipsometer and configured to determine a critical dimension and a thin film characteristic of the specimen from the one or more output signals.

6634. The system of claim 6633, wherein the system is further configured as a stand-alone device.

6635. The system of claim 6633, wherein the system is integrated into a process tool.

6636. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at an oblique angle of incidence.

6637. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at an oblique angle of incidence with a light beam comprising visible and ultraviolet light.

6638. The system of claim 6333, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at a normal angle of incidence.

6639. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at a normal angle of incidence with linearly polarized light.

6640. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at a normal angle of incidence with polarized light.

6641. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at a normal angle of incidence with polarized, visible light.

6642. The system of claim 6633, wherein the spectroscopic ellipsometer is further configured to focus light to a small spot on the specimen.

6643. The system of claim 6633, wherein the processor is further configured to use the thin film characteristic to determine the critical dimension.

6644. The system of claim 6633, wherein the system is coupled to a stand-alone metrology or inspection system, and wherein the systems are configured such that signals may be sent between the systems.

6645. The system of claim 6633, wherein the thin film characteristic comprises optical properties of one or more layers on the specimen.

6646. The system of claim 6633, wherein the critical dimension comprises a lateral dimension of a feature on the specimen defined in a direction substantially parallel to an upper surface of the specimen, a lateral dimension of the feature defined in a direction substantially perpendicular to the upper surface of the specimen, or a sidewall angle of the feature.

6647. The system of claim 6633, wherein the specimen comprises a wafer.

6648. The system of claim 6633, wherein the specimen comprises a substrate suitable for fabrication of a reticle.

6649. A system configured to determine at least two properties of a wafer, comprising:

a spectroscopic ellipsometer configured to generate one or more output signals during measurement of the wafer, wherein the spectroscopic ellipsometer is integrated into a lithography track; and

a processor coupled to the spectroscopic ellipsometer and configured to determine a critical dimension and a thin film characteristic of the wafer from the one or more output signals.

6650. The system of claim 6649, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at an oblique angle of incidence with a light beam comprising visible and ultraviolet light.

6651. The system of claim 6649, wherein the spectroscopic ellipsometer is further configured to illuminate the specimen at a normal angle of incidence with polarized, visible light.

6652. The system of claim 6649, further comprising a controller computer configured to control a temperature within the track.

IX. EVIDENCE APPENDIX

The following evidence has been relied upon by Appellant in the Appeal. This evidence was submitted with the Response After Final Rejection Pursuant to 37 C.F.R. § 1.116 filed on October 14, 2004 and was entered in the record by the Examiner as indicated in the Advisory Action mailed November 3, 2004. Copies of the evidence are submitted herewith for the reference of the Board during consideration of the Appeal.

• Excerpt from Peter Van Zant, Microchip Fabrication: A Practical Guide to Semiconductor Processing, Fourth Edition, New York, New York, McGraw-Hill, 2000, p. 598

• Excerpt from S. Wolf et al., in Silicon Processing for the VLSI Era: Volume 1 - Process Technology, Sunset Beach, California, Lattice Press, 1986, p. 447

• Excerpt from Handbook of Silicon Semiconductor Metrology, Alain C. Diebold, New York, New York, Marcel Dekker, Inc., 2001, p. 377

• Excerpt from Webster's II New Riverside University Dictionary, Boston, Massachusetts, Houghton Mifflin Company, 1984, p. 748